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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/585,397	07/06/2006	Laurie A. Hodgins	RR-623 PCT/US	2521
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EXAMINER				
DITRANI, ANGELA M				
ART UNIT		PAPER NUMBER		
3676				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/585,397

Applicant(s)

HODGINS ET AL.

Examiner

Angela M. DiTrani

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SI/309)
- Paper No(s)/Mail Date 10/10/06
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "temporarily" in claim 1 is a relative term which renders the claim indefinite. The term "temporarily" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "temporarily" renders the scope of the claim indefinite insofar as because the stability of the foam introduced into the well bore can not be determined.

3. Claims 11 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The terms "relatively high" and "relatively low" in claims 11 and 13 are a relative terms which render each claim indefinite. The terms "relatively high" and "relatively low" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The terms "relatively high" and "relatively low" renders the scope of the weight of the polyacrylamide indefinite insofar as because it is not clear as to how "high" and "low" the weight of the polyacrylamide can be to be considered "relatively high" or "relatively low."

4. Claims 19 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "effective" in claims 19 and 20 is a relative term which renders the claim indefinite. The term "effective" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The term "effective" renders the scope of the claim indefinite because it is unclear what is meant by the phrases "gelant effective viscosity" and "foam effective viscosity."

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1, 2, and 14-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US 6,439,308) in view of Dalrymple et al. (US 5,944,106).

With respect to independent claim 1, Wang discloses a method comprising the steps of first introducing a gelant into the well bore, wherein the well bore is in fluid communication with a subterranean formation; and second introducing a temporarily stable foam into the well bore in order to overdisplace the gelant from the well bore and into the formation (col. 2, l. 40-59; col. 4, l. 53-67). The reference further teaches that the first gelant slug enters a high permeability zone and/or thief zone and reduces the permeability therein (col. 3, l. 15-30). Wang, however, fails to explicitly disclose the method of reducing the permeability of the high permeability zone as a method for reducing water influx into the well bore. Dalrymple et al. teaches methods of selectively treating high permeability zones within a reservoir, wherein the high permeability zones are taught to produce water or be subject to water influx, for the purpose of preventing stimulation of a water producing zone during oil production stimulation (col. 1, l. 37-49). Since both Wang and Dalrymple teach methods of reducing the permeability of high permeability zones and Dalrymple further teaches that high permeability zones can be subject to water influx wherein it is desirable to reduce water flux of the reduction thereof, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the method of reducing the permeability of high permeability zones of Wang within a reservoir comprising high permeability zones subject to water influx in order to yield the predictable result of reducing the water influx therein, thus preventing the stimulation of

any water producing zones during the enhanced oil production operations conducted therein.

With respect to depending claim 2, Wang teaches the gelant comprising a polymer (col. 2, l. 44-46; col. 3, l. 31-37).

With respect to depending claims 14-18, Wang teaches wherein the foam is comprised of water and a surfactant, wherein the surfactant is comprised of an olefin sulfonate, wherein the surfactant is comprised of an alpha olefin sulfonate, wherein a concentration of the surfactant in the foam is no greater than about 0.1 percent by weight of the foam, and wherein the concentration of the surfactant in the foam is no greater than about 0.05 percent by weight of the foam (col. 4, l. 8-26).

With respect to depending claims 19 and 20, Wang teaches wherein a polymer may be added to the aqueous solution for the purpose of increasing the viscosity of the displacing foam composition (col. 3, l. 62-65). Although the reference fails to explicitly state wherein the gelant "effective" viscosity and the foam "effective" viscosity are approximately equal, or, the gelant "effective" viscosity is less than or equal to the foam "effective" viscosity, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide for a viscosity of the gelant that is approximately equal to or less than the viscosity of the foam in order provide the optimal foam viscosity capable of achieving the desired gelant displacement within the high permeability zones of the formation.

8. Claims 3-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang in view of Dalrymple as applied to claims 1 and 2 above, and further in view of Sydansk et al. (US 4,683,949).

Wang, in view of Dalrymple, teaches the method of plugging high permeability zones of a subterranean formation as stated above, and, further, teaches a polymer, such as polyacrylamide, wherein the amount of polymer used within the gelant slug is no greater than about 2 percent by weight of the gelant (col. 5, l. 30-32). The reference, however, fails to teach wherein the gelant is further comprised of a cross-linker, wherein the cross-linker is comprised of chromium ions when the polymer is polyacrylamide, wherein the weight ratio by weight of the polyacrylamide to the chromium ions in the gelant is no greater than about 80 to 1, wherein the formation is a fractured formation, wherein the concentration of the polyacrylamide in the gelant is no greater than about 1 percent by weight of the gelant, wherein the permeability of the formation is greater than or equal to about 1000 mD, wherein the polymer is comprised of a relatively high molecular weight polyacrylamide and wherein a concentration of the polyacrylamide in the gelant is between about 0.2 and 1 percent by weight of the gelant, wherein the formation has a permeability and wherein the permeability of the formation is less than about 1000 mD, wherein the polymer is comprised of a relatively low molecular weight polyacrylamide and wherein a concentration of the polyacrylamide in the gelant is at least about 1 percent by weight of the gelant.

Sydansk et al. teaches methods of reducing the permeability of relatively high permeability regions and anomalies, such as fractures and fracture networks (col. 7, l.

2-13), within a subterranean formation wherein a gelant comprising an acrylamide polymer of polyacrylamide or partially hydrolyzed polyacrylamide having an average molecular weight within the range of about 10,000 to about 50,000,000 (col. 3, l. 22-36) is crosslinked with a crosslinker comprising chromium ions (col. 3, l. 43-57), and, further, wherein the weight ratio of the acrylamide polymer to the chromium ions falls within the range of about 1:1 to about 500:1 (col. 5, l. 61-68), for the purpose of providing a gel that is capable of being tailored to a specific application within a subterranean environment so that the demands of the subterranean zone with respect to the desired gelation rate, resultant gel strength and stability are achieved. Since both Wang and Sydansk et al. teach methods of plugging high permeability streaks within a formation, and Sydansk et al. teaches a composition capable of being tailored to meet the needs of a particular formation by controlling the gelation rate, gel strength and stability thereof, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a gelant composition as taught by Sydansk within the method of Wang in order to yield the predictable result of developing an enhanced gel within the method of Wang that is most suitable to meet the needs of the formation into which it is injected.

With respect to depending claims 10-13, although the combination is silent to the permeability of the formation, and further whether a "relatively high" or "relatively low" molecular weight polyacrylamide is employed therein at the particular concentration, Sydansk teaches a wide range of average molecular weight of the polyacrylamide taught therein. It would have been an obvious matter of choice or design to one having

ordinary skill in the art at the time the invention was made to employ a "relatively high" or "relatively low" molecular weight polyacrylamide at the particular concentration by weight of the gelant as claimed insofar as because it has been held that "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F. 2d 454, 456, 105 USQ 233, 235 (CCPA 1955). Therefore, it would have been obvious to one of ordinary skill to employ such an optimized composition within the method of Wang, in view of Dalrymple, in order to achieve the desired gelation rate, resultant gel strength and stability of the gel once formed within the high permeability zones of the formation so as to reduce water influx therein and enhance subsequent oil production therefrom.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela M. DiTrani whose telephone number is (571)272-2182. The examiner can normally be reached on M-F, 6:30AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on (571)272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AD
01/16/09

/Zakiya W. Bates/
Primary Examiner, Art Unit 3676